



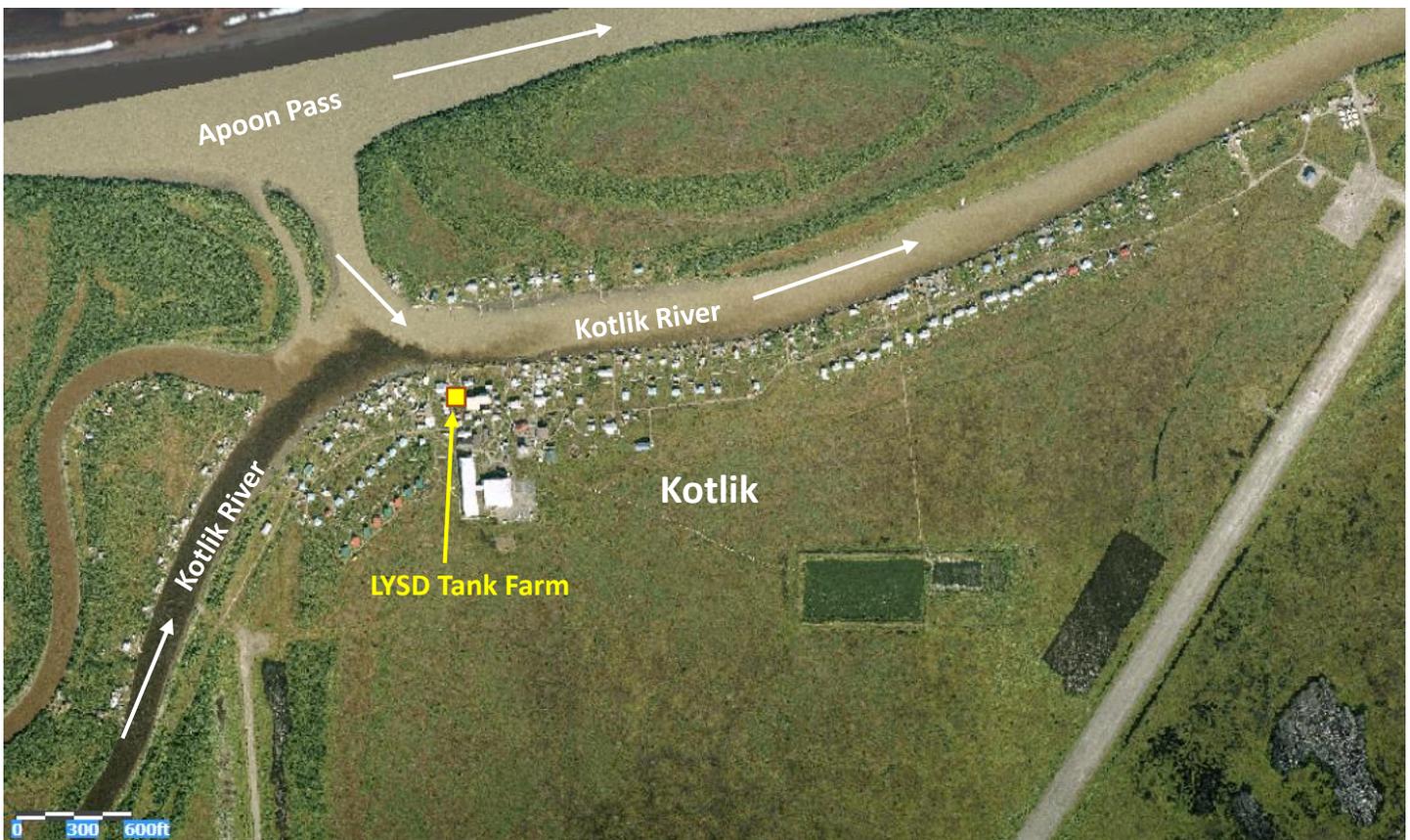
# DETAILED ACTION PLAN

## KOTLIK LYSD FORMER TANK FARM

### WASTE EROSION ASSESSMENT & REVIEW (WEAR)

MAY 2015

The **Kotlik Lower Yukon School District (LYSD) Former Tank Farm** is located at latitude 63.033025 and longitude -163.55602 and was inspected for the Waste Erosion Assessment and Review (WEAR) project on July 11, 2012. The landowner is the Lower Yukon School District per Quit Claim Deed 2005-001281-0 recorded on September 20, 2005 in the Bethel recording district.



Imagery Dated 2006. WEAR Map at <http://dec.alaska.gov/eh/sw/wear.html>

**Community\* – KOTLIK** – Located on the east bank of Kotlik River, 35 miles northeast of Emmonak and 165 miles northwest of Bethel. The riverbank is used for a variety of community activities including: boat, ATV, and snowmachine access, boat storage, fishing, and hunting.



## CONTAMINANT RISK

The Kotlik LYSD former tank farm is located within the community, between the city council building and teacher housing, in close proximity to homes. This site included stressed vegetation and is approximately 27 miles from a spectacled eider critical habitat area.

The former tank farm, dating back to 1979, is a known contaminated site due to petroleum contamination. It is logged under File ID 2423.38.005 with the ADEC Contaminated Sites Program (CSP). Prior to tank removal, it consisted of six 8,000-gallon fuel tanks on wooden supports within a lined earthen berm. The liner was noted as torn in 1997 and the area smelled strongly of fuel odors in 2001. The tanks were removed sometime between 2001 and 2006 along with some polluted soil. The liner and some wooden boards from the tank supports remained at the site as of the 2012 visit.

Soil and surface water testing conducted in 2008 suggests the tank farm is the source of contamination on the adjacent property to the south of the site. Soil samples from the adjacent site contained diesel range organics (DRO) up to 4,590 mg/kg, which is above soil cleanup levels. The surface water samples also exceeded surface water cleanup standards. Sheen was noted on the surface water adjacent to creosoted logs to the south of the property in 2008 and during the 2012 WEAR site visit.

The site is considered a small site measuring approximately 0.01 acres and is within the drinking water protection zone for the Kotlik Water System. The surface water intake is located less than 300 feet downstream of the site. According to the Alaska Department of Environmental Conservation's (ADEC), Drinking Water Watch database, the water system is monitored annually for a group of volatile organic compounds (VOCs) related to fuel products. The January 2015 sampling results indicated no VOCs were detected in the drinking water.



## EROSION RISK

This former tank farm is located 110 feet away from an eroding area of the Kotlik River. The US Army Corps of Engineers' 2009 study, *Alaska Baseline Erosion Assessment (BEA)*, indicates that the riverbank in this area is eroding at 3 feet per year. Recent major erosion events have been recorded in the community in 2002, 2003, 2005, 2011 and 2013. The 2011 and 2013 events resulted in presidential disaster declarations for Kotlik. The BEA lists the primary causes of erosion as natural fluctuations in flows and water levels, flooding, ice jams, spring break up, and wave action from boat wakes and wind. Erosion is occurring in the form of scarps and undercutting along the entire riverbank near the site. This area is used as a boat landing, which also helps to accelerate erosion. The silty soil, with its finer granules, at the site and riverbank is more likely to erode than other soil types. The soil is further destabilized with the semi-annual thaw-freeze cycle.

Erosion is estimated to impact the site in approximately around 2040.



## MITIGATION

The CSP manages this site as an active contaminated site. The site has not been fully characterized and no cleanup efforts are currently underway to address the petroleum contamination. No erosion mitigation or contaminant mitigation is in place for this site.

### Mitigation Options

- A. **No Action** – If no action is taken to control erosion, the riverbank will continue to erode until it reaches the former tank farm. Petroleum polluted soil will then wash into the Kotlik River, potentially impacting the nearby surface water drinking water source and downstream subsistence areas.
- B. **Remove Site** – Following characterization to determine the extent of contamination, the site could be removed by remediating the polluted soil in the community or shipping the soil out of the community for treatment and disposal. This option requires the CSP to approve a sampling plan and a cleanup plan. Reducing contamination to acceptable cleanup standards with this option means the site will have much less impact if eroded.
- C. **Erosion Mitigation** – River currents, waves, and ice jams are the primary causes of erosion for this site. The Department of Commerce, Community, and Economic Development’s Division of Community and Regional Affairs handbook, *Understanding and Evaluating Erosion Problems*, suggests the best methods for protecting against erosion from these causes are breakwaters, spur dikes, revetments, seawalls, vegetation, groins, beach fill, or relocation. The full list of suggested methods is provided in Table 2 of the document which is available online at <http://commerce.state.ak.us/dnn/dcra/PlanningLandManagement.aspx>. Installing erosion control measures would only address the erosion risk for the site, it would not address the contaminant risk. The site would still contain polluted soil in a central and publicly accessible location which could impact public health and the environment.

## SUMMARY

The Kotlik LYSD Former Tank Farm is a known contaminated site (File ID 2423.38.005) due to petroleum contamination. The tanks and structures have been removed, leaving only lumber and a partial liner remaining onsite. The site has not been characterized to determine the level and extent of contamination. It is located between the city council building and teacher housing and is centrally located with many other homes and buildings nearby. The surface water intake for the community drinking water supply is located less than 300 feet downstream of the site.

The Kotlik River is experiencing active erosion at a rate of approximately 3 feet per year. There are no mitigation methods in place. The site was 110 feet from Kotlik River during the 2012 site visit. Erosion is

estimated to impact the site around 2040. This could potentially release contaminants that may impact nearby drinking water supply and downstream subsistence areas.

## RECOMMENDATIONS

Treatment or removal of the polluted soil is recommended over installing erosion control measures for this site. Fencing installed around the site is recommended to prevent public access to possible contaminants. The Kotlik Water System should continue to monitor for VOCs per the Drinking Water Program’s requirements. The site should be fully characterized to determine the extent of the contamination. A cleanup plan should then be developed and approved by the CSP. For more information on the cleanup process, see the Contaminated Sites Program website at <http://dec.alaska.gov/spar/csp/>.

Erosion mitigation measures will likely be necessary to protect structures in this area from erosion; however, it will not eliminate the potential adverse effects of contamination on the drinking water supply and subsistence resources. Therefore the SWP recommends remediation of the contamination in addition to any erosion mitigation measures that are conducted.



LYSD Tank Farm



Imagery Dated 2006. WEAR Map at <http://dec.alaska.gov/eh/sw/wear.html>

\*Community Database Online, Division of Community and Regional Affairs, Department of Commerce, Community and Economic Development

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